Catalogue of American Amphibians and Reptiles.

HEDEEN, STANLEY E. 1977. *Rana septentrionalis*.

Rana septentrionalis Baird
Mink Frog

Rana septentrionalis Baird, 1854:61. Type-locality, "Northern Minnesota"; restricted to "Lake Itasca," Clearwater County, Minnesota, by Schmidt (1953:80). No type-specimen known to exist.

Rana sinuata Baird, 1854:61. Type-locality, "Sackett's Harbor, Jefferson County, New York." Syntypes (5), U.S. Nat. Mus. 3420, collected by S. F. Baird, summer of 1850 (not seen by author).

• CONTENT. The species is monotypic.

• DEFINITION AND DIAGNOSIS. This is a small to medium-sized ranid; body size at metamorphosis 29 to 42 mm, adults 45 to 76 mm. The ratio of snout-vent length to tympanum diameter is below ten in adult males only. Dorsolateral folds are often absent or weakly developed. Toes are broadly webbed; only the tip of the penultimate fourth toe phalanx is free of the web. Dorsal ground color varies from olive brown through green. The dorsal surface is mottled or spotted with dark brown markings. The venter is yellowish white. The skin is smooth, and may produce a mink-like odor when the frog is rubbed.

Rana septentrionalis may be distinguished from sympatric *R. clamitans* by the crossbanding on the dorsal surface of the hind legs of the latter, and the absence of this character in *septentrionalis*. The webbing on the hind foot of *septentrionalis* extends to the last joint of the fourth toe and to the tip of the fifth toe; whereas, the webbing of *clamitans* does not reach the last joint of the fourth toe or the tip of the fifth toe.

The larva reaches a total length of 100 mm. The dorsum is olive brown or greenish with small dark spots, belly straw yellow, opaque, and mottled on the sides, tail paler than the dorsum and marked with irregular dark blotches.

• DESCRIPTIONS. Adults are described by Cope (1889), Dickerson (1906), Boulenger (1920), Wright (1932), Wright and Wright (1949), Logier (1952), and Conant (1975); eggs and egg masses by Livezey and Wright (1947); and tadpoles by Wright (1929), Orton (1939), Logier (1952), and Altig (1970).

• ILLUSTRATIONS. Conant (1975) contains a color photograph of an adult and drawings of the spotted and mottled dorsal patterns. Cochran and Goin (1970) present a black and white photograph of an adult. Wright and Wright (1949) provide black and white photographs of adults, tadpole and egg mass, and drawings of the egg and tadpole mouthparts. Cope (1889) figures the head and feet of a syntype. Gosner (1959) illustrates a tadpole tooth. The record album "Voices of the Night" (Comstock Publ. Co., Ithaca, New York) includes a recording of a breeding chorus.

• DISTRIBUTION. *Rana septentrionalis* occurs from Labrador to northern New Hampshire and westward to northwestern Minnesota and southeastern Manitoba. The northern limits of the range in Canada are unknown. Records from Prince Edward Island are erroneous (Cook, 1967), and a record from southern New York is questionable (Moore, 1952). Dickinson's (1965) mapped record for Washington County, Wisconsin is a printing error (Dickinson, pers. comm.). Suzuki's (1952) record for Rock County, Wisconsin (Univ. Wisc. 9672) is based on a misidentified *R. catesbeiana*, and his mapped record for Waukesha County is probably also an error (see Cahn, 1929).

Moore (1952) provides a comprehensive list of localities. See also the following papers: Canada (Bleakney, 1958; Logier and Toner, 1961; Schueler, 1975); Manitoba (Cook, 1963); New Brunswick (Gorham, 1965); Quebec (MacCulloch and Bider, 1975); Minnesota (Hedeen, 1970).

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. The major comprehensive works are Garnier (1883), Wright (1932) and Wright and Wright (1949). Areas covered in other papers include: habitat (Jackson, 1914; Marshall and Buell, 1955); physiological adaptations to aquatic habitat (Schmid, 1965, 1968, 1969; Schmid and Barden, 1965; Schmid and Underhill, 1964; Boernke, 1973, 1974); body temperature (Brattstrom, 1963; Hedeen, 1971a); high temperature tolerance (Dean, 1966); phototactic responses (Jaeger and Hailman, 1973); food and feeding behavior (Hedeen, 1972a; Kramek, 1972, 1976; Stewart and Sandison, 1972); escape behavior, predators and red-leg (Hedeen, 1972b); parasites (Metcalf, 1923; Bouchard, 1951; Camara and Buttrey, 1961; Mace and Anderson, 1975); premetamorphic growth (Hedeen, 1971b); postmetamorphic growth (Hedeen, 1972c); breeding behavior (Aronson, 1943; Hedeen, 1972c); sperm proteolytic activity (Elinson, 1974); embryonic temperature adaptations (Moore, 1952; Bachmann, 1969; McLaren and Cooley, 1972); hybridization (Moore, 1955; Elinson, 1975a, 1975b); nuclear DNA content (Olmo, 1973); electrophoretic analysis (Schmiel and Guttman, 1974; Elinson, 1975a); systematic relationships (Cope, 1889; Boulenger, 1920; Orton, 1952; Tihen, 1954; Gosner, 1959).

• ETYMOLOGY. The specific name is the Latin word meaning "of the Septentriones," signifying "of the north."

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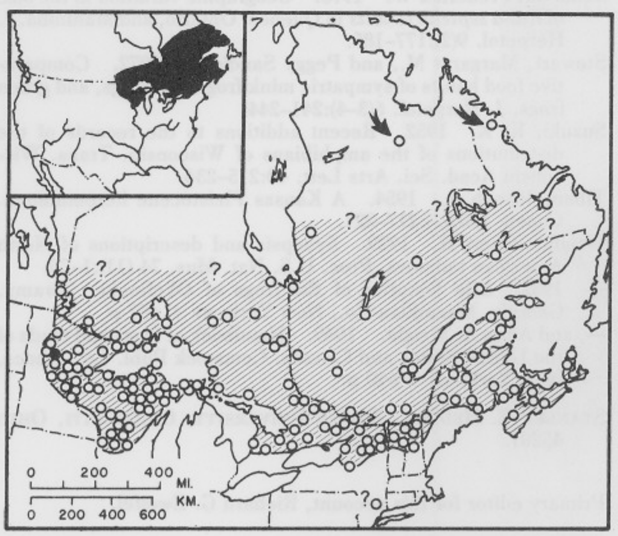
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MAP. Solid circle marks the type-locality; open circles show other localities. Question marks indicate a doubtful locality and unknown distributional boundaries.

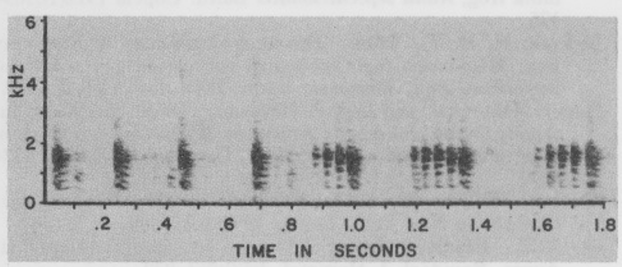


FIGURE. Audiospectrogram (narrow band, 45 Hz) of call of *Rana septentrionalis*. Recorded 9 July 1970 at Lake Itasca, Minnesota. Courtesy of L. W. Oring.

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Primary editor for this account, Richard G. Zweifel.

Published 31 October 1977 by the SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES.